

Patent Claims

1. A method for determining coordinates of a workpiece (9), in which
 - 5 - a first coordinate system which is fixedly positioned with reference to the workpiece (9) is defined,
 - first coordinates of the workpiece (9) are measured by using a first coordinate measuring device (3),
 - 10 - second coordinates of the workpiece (9) are measured by using a second coordinate measuring device (5), and
 - a common set of coordinates in the first coordinate system or in a second coordinate system fixedly positioned with reference to the workpiece (9) is generated from the first coordinates and from the second coordinates.
- 20 2. The method as claimed in claim 1, in which the workpiece (9) and at least one reference object (8) are fixedly interconnected, in which reference coordinates of the reference object(s) (8) are measured by the first coordinate measuring device (3) and by the second coordinate measuring device (5), and in which the common set of coordinates is generated by using the reference coordinates.
3. The method as claimed in claim 2, in which
 - 30 coordinates of the workpiece (9) and reference coordinates of the reference object(s) (8) are measured by the first coordinate measuring device (3), by the second coordinate measuring device (5) or by a further coordinate measuring device, in which information
 - 35 relating to a relative position and orientation of the

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reference object(s) (8) on the one hand and of the
workpiece (9) on the other hand is obtained therefrom,
and in which the common set of coordinates is generated
by using the information relating to the relative
5 position and orientation.

4. The method as claimed in claim 2 or 3, in which the
reference object(s) (8) with the workpiece (9) fastened
thereon is or are moved into a defined position that is
10 fixed with reference to the first coordinate measuring
device and/or with reference to the second coordinate
measuring device, and in which at least some of the
reference coordinates, the first coordinates and/or the
second coordinates are measured while the reference
15 object(s) (8) is or are located in the defined position.

5. The method as claimed in one of claims 2 to 4, in
which an orientation and/or position of the reference
object(s) (8) with the workpiece (9) fastened thereon
20 are/is varied between the measurement of the first
coordinates and the measurement of the second
coordinates.

6. The method as claimed in one of the preceding
25 claims, in which different measurement principles are
applied for measuring the coordinates in the first
coordinate measuring device (3) and in the second
coordinate measuring device (5).

30 7. The method as claimed in one of the preceding
claims, in which a surface of the workpiece (9) is
scanned by the first coordinate measuring device (20),
and coordinates of at least one point on the surface of
the workpiece (9) are measured thereby.

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8. The method as claimed in one of the preceding claims, in which a material of the workpiece (9) is transirradiated by the second coordinate measuring device (16, 17), and coordinates of at least one point of the workpiece (9) are determined therefrom.

9. The method as claimed in one of the preceding claims, in which measured values of the workpiece (9) and/or of a reference object (8) are/is measured at the second coordinate measuring device (16, 17) in a spatial area in which an edge or material transition of the workpiece (9) and/or of the reference object (8) is located, and in which the first coordinates measured by the first coordinate measuring device (20) are used for the purpose of assigning to one another a position of the edge or of the material transition and the measured values.

10. A method in which coordinates of a multiplicity of workpieces (9) are determined during and/or after a production process and/or machining process of the workpieces (9) in accordance with the method as claimed in one of the preceding claims.

11. A measuring arrangement (1) for determining coordinates of a workpiece (9), in which the measuring arrangement (1) exhibits the following:

- a first coordinate measuring device (3) for measuring first coordinates of the workpiece (9),
- a second coordinate measuring device (5) for measuring second coordinates of the workpiece (9), and
- a determining device (11) that is connected to the first and the second coordinate measuring device (3, 5) and is fashioned for generating a

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common set of coordinates for the workpiece (9) from the first coordinates and from the second coordinates, the common set of coordinates being defined in a coordinate system that is fixedly positioned with reference to the workpiece (9).

12. The measuring arrangement as claimed in the preceding claim, having a movement device (12) that is fashioned for bringing the workpiece (9) into a measuring position in which the first coordinate measuring device (20) and/or the second coordinate measuring device (16, 17) can measure the first and, respectively, the second coordinates of the workpiece (9).

13. The measuring arrangement as claimed in the preceding claim, in which the movement device (12) is fashioned for sequentially bringing a multiplicity of the workpieces (9) into the measuring position.

14. A computer program for determining coordinates of a workpiece (9) with the aid of program code means that are fashioned for generating a common set of coordinates in a coordinate system fixedly positioned with reference to the workpiece (9) from

- first coordinates of the workpiece (9) measured by using a first coordinate measuring device (3), and
- second coordinates of the workpiece (9) measured using a second coordinate measuring device (5).

15. The computer program as claimed in claim 14, in which the program code means are fashioned for calculating a relative position and orientation of the reference object(s) (8), on the one hand, and of the workpiece (9), on the other hand, from the first and/or

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the second coordinates of the workpiece (9) and from measured reference coordinates of at least one reference object (8).

5 16. A computer program with program code means in accordance with one of the two preceding claims that are stored on a computer-readable data carrier.

10 17. A data carrier or computer system on which a data structure is stored that executes the computer program as claimed in claim 14 or 15 after being loaded into a user and/or main memory of a computer or computer network.

15 18. A computer program product with program code means as claimed in claim 14 or 15.